Hickam Environmental Restoration Program Lends Mother Nature a Helping Hand

By: Nicole Clements

Project Site as a Landfill in the 1950s

Vegetable Oil Injection Wells at Project Site in 2003

Leave it to our Restoration Program engineers to use something this ingenious as they bring cutting-edge technology right here to Hickam. "The latest addition to an ongoing environmental cleanup of an old landfill, at the present location of the Mamala Bay Golf Course, introduces a method of environmental cleanup that is simple, cheap and effective," said Mr. Bill Grannis, Remedial Project Manager at the Hickam Environmental Restoration Program. The cleanup site is located near the first hole of the Mamala Bay Golf Course, so those of you with a big slice, be "fore" warned.

The Hickam Environmental Restoration program has teamed with Headquarters Air Force Center for Environmental Excellence (AFCEE) in validating a technology for cleaning up past spills of used cleaning solvents here on Hickam. "Research and field experience have shown that by injecting food grade vegetable oil into groundwater that has been contaminated by solvents, we can enhance the natural processes that breakdown contaminants," said Erica Becvar, AFCEE Program Manager for the project. "Hickam Air Force Base is one of 13 Air Force locations to participate in the AFCEE vegetable oil initiative," said Becvar.

So how does injecting vegetable oil help "Mother Nature" clean up contaminated groundwater? "The vegetable oil provides the microorganisms, or bugs, that are naturally present in the ground, with an additional source of organic carbon, or food, and thereby, supports a larger population of bugs," explains Grannis. As the population of bugs grows and the groundwater composition changes with the addition of the vegetable oil, amazing things start to happen with the contaminants. "The contaminants separate out of the groundwater into the vegetable oil where there is an increased population of bugs. The bugs will then start to consume the contaminants," said Grannis. With the contaminants separated into the oil and the fact that oil and water do not mix, this spells good news for our groundwater.

"The vegetable oil has been injected into the ground in an area where used cleaning solvents were found in the brackish water below the site. In terms of human health risks, the site is over salty groundwater that will never be used for consumption and does not pose a risk to human health," said Mr. Todd Lanning, Chief of the Environmental Restoration Program.

"The contamination is the result of past waste disposal practices at the landfill, which was formerly known as the Tri-Services Landfill. The cleaning solvents that were disposed of in the landfill were historically used to clean aircraft and other mechanical parts. In 1965, disposal operations stopped, the wastes were consolidated, and the Air Force designed and constructed the Mamala Bay Golf Course over and around the former landfill," said Grannis.

"We completed the first injection of vegetable oil in April of 2003, and groundwater monitoring was performed in June of 2003. However, it generally takes 9 months to a year to observe the biological breakdown of these types of contaminants," said Mr. John Ratz, Project Manager for Parsons, the contractor performing the site work.

“This method has been used successfully in similar situations around the country, and we are confident that the level of groundwater contaminants will decrease as a result of our efforts,” said Lanning. “The important thing to note is that so far, the vegetable oil is doing what we intended it to do. The contaminants are mixing with the vegetable oil and are being drawn out of the groundwater,” said Lanning.

As an added bonus, “The cleanup project will enhance the soil quality and eliminate some of the bare spots that are currently present at the golf course,” said Tom Stanfill, Mamala Bay Golf Course Manager.

If you would like more information about this project, or information on any of the exciting environmental cleanup projects that the Hickam Environmental Restoration Office is involved in, please contact Ms. Nicole Clements, Community Involvement Specialist, at 449-1584, extension 229, or e-mail her at christine.clements@hickam.af.mil.